

Review Article**A SCOPING REVIEW OF THE UNMET NEEDS FOR PHYSIOTHERAPY SERVICES FOR THE PEDIATRIC POPULATION IN CANADA****MELANIE LYONS, ANNE STOKES, JUSTIN PARKER, SANDRA HANNA, SARAH WOJKOWSKI****School of Rehabilitation, McMaster University, 1400 Main St. W, Institute of Applied Health Sciences (IAHS), Rm. 432, Hamilton, Ontario, Canada, L8S 1C7****Email: wojkows@mcmaster.ca*****Received: 06 Aug 2019 Revised and Accepted: 10 Oct 2019*****ABSTRACT**

The purpose of this review was to investigate the types of unmet needs for Physiotherapy (PT) services for the pediatric population in Canada. This scoping review was completed between January and July 2019. Recommendations by Arksey and O'Malley and Levac *et al.* informed the review. Four reviewers independently reviewed 2575 abstracts, of which 81 articles were selected for full-text review. Data was extracted from a final total of 24 articles. The access framework proposed by McIntyre *et al.* was used for thematic analysis of the data and to draw results. Most unmet needs were identified in the context of multidisciplinary rehabilitation services, including PT. Unmet needs were most commonly identified in the domains of availability (e. g. physical or geographic access) and acceptability (e. g. concordance of expectations for care between clients and healthcare providers). Increased coordination of care, appropriate information for parents, clarification of roles and expectations for providers and parents, and decreased wait times were the most commonly reported unmet needs. To meet the needs of the pediatric population Physiotherapists (PTs) and rehabilitation teams would benefit from maximizing collaboration and communication between providers and families and engaging in service reorganization efforts to improve wait times and coordination of services.

Keywords: Physiotherapy, Rehabilitation, Pediatrics, Unmet need, Accessibility, Service delivery, Canada, Scoping review

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INTRODUCTION

Incompatibility between a child's functional abilities and their environment can result in disability [1]. Rehabilitation is a process that can improve the child's functional abilities by maximizing the strengths and resources of the child and their family within their environment [1]. Rehabilitation can be provided in various settings, ranging from hospital to community care [2]. Access to early initiation of rehabilitation for children with disabilities is important as it is associated with better functional and health outcomes, greater reduction in healthcare costs and disability, and improved Quality Of Life (QOL) [2].

Many Healthcare Providers (HCPs) are involved in the delivery of rehabilitation services to children, including Physiotherapists (PTs). Physiotherapists provide this service to populations of all ages to develop, maintain and restore optimal functional abilities and improve QOL, often within a multidisciplinary team [2, 3]. They also utilize a family-centered approach, which involves including parents and caregivers as active members in clinical decision-making as they are the most aware of their child's individual needs [4].

Approximately 20% of Canadian children from birth to three years of age display motor and social developmental delays [5]. Early rehabilitation for these children is essential as these early stages represent critical periods of development where optimal functional and educational gains can be achieved [6, 7]. Unfortunately, many children with developmental impairments do not receive early intervention to address these delays. For example, children with Cerebral Palsy (CP) in Canada are often not diagnosed until at least 18 mo; as a result, these children are missing several months of crucial early intervention [8]. Furthermore, previous beliefs that children with Developmental Coordination Disorder (DCD) will outgrow their impairments have led to later diagnosis and missed opportunities for early rehabilitation intervention [9, 10].

The benefits of rehabilitation in the prevention of disability and the improvement of QOL in children have been established; however, there remains a need for access to rehabilitation services for children in Canada [11]. This need continues to rise as the number of children

surviving with disabilities increases [6]. In Canada, there are several potential barriers to accessing Physiotherapy (PT) services in a pediatric population; Phoenix *et al.* [12] postulate a variety of reasons including child or family-specific factors such as significant child needs, language barriers, or differing views about child needs. The authors also outline factors related to the provision of services, such as waitlists, hours of operation, or financial barriers [12].

A recent scoping review identified a range of unmet needs for community PT services for adults in Canada [13]. To our knowledge, there is no comprehensive review of the literature with regard to the unmet PT needs in pediatric patients in Canada. A review of this nature could identify specific areas to address in order to improve access to PT services for this population. The purpose of this review is to explore the unmet needs for PT services in a pediatric population in Canada; pediatrics in this context is defined as children 18 y or younger. The decision to limit the search to this age group was based on the ages for which Canadian PT services transition from pediatric to adult. The exact age at which patient's transition to adult services in Canada varies by province and institution, however a frequently cited age used to define pediatric services in Canada was found to be 18 y [14, 15]. Therefore, this age was used to limit the results of this review. A scoping review was utilized to systematically determine the key concepts that underpin the unmet pediatric PT needs, and to examine this topic broadly to determine the extent and nature of research in this area [16]. For the purposes of this review, the concept of unmet needs is based on the research by Carr and Wolfe [17], who define unmet needs as "the differences, if any, between those services judged necessary to deal appropriately with defined health problems and those services actually received". This definition is further informed by the access framework proposed by McIntyre *et al.* [18], who outline three access domains. These three domains are availability (e. g. physical or geographic access to services), affordability (e. g. ability to pay for products or services), and acceptability (e. g. concordance of expectations for care between clients and HCPs). Due to the scope of this review the analysis is limited to access and will not investigate quality in terms of provision of care within evidence-based guidelines.

Methods

The proposed methods and inclusion criteria for this scoping review have been previously published [19]. There was no feedback provided for the protocol; therefore, the methods outlined in the protocol were used for this scoping review. The methodologies are based on those proposed by Arksey and O'Malley [16] in addition to the recommendations by Levac *et al.* [20]. The PRISMA Extension for Scoping Reviews (PRISMA-ScR) guided the reporting of the scoping review protocol and the final scoping review (appendix A) [21]. The stages proposed by Arksey and O'Malley [16] include: 1) identify the research question, 2) perform the search and identify relevant studies for consideration, 3) select studies that meet inclusion criteria for detailed analysis, 4) extract and chart the data, 5) collate, summarize, and report the results.

Research question

What types of unmet needs have been identified for PT services for the pediatric population in Canada?

Identifying relevant studies

A systematic search of the literature was used to identify appropriate articles.

Databases

Four electronic databases, including Ovid AMED (1985-February 2019), Ovid EMBASE (1996-February 2019), Ovid MEDLINE (1946-February 2019), and EBSCOhost CINAHL (1987-February 2019) were searched in March 2019.

Keywords

Electronic keyword searching was performed in each database. Variations of each of the following keywords and related subheadings were included: "physiotherapy", "physical therapy", "rehabilitation", "unmet need", "perceived need" (table 1). The results were limited by age to children (18 y old or younger), English or French language, and Canada.

Years

The electronic search was limited to articles published in 2000 or later.

Study selection

To be eligible for inclusion, articles needed to meet the following criteria: 1) discuss unmet needs for PT services for pediatric populations exclusively, or discuss unmet needs for rehabilitation services for pediatric populations, where PT is clearly included as one of the rehabilitation services, 2) completed in any setting or context (i.e. publicly or privately funded) in Canada, including but not limited to school, community, rehabilitation or acute care settings, 3) experimental, quasi-experimental, observational, qualitative, scoping reviews, systematic reviews, meta-analyses, or test and opinion papers and 4) published in the year 2000 or onwards in order to reflect current service provision. A total of 2983 abstracts were identified in the search (MEDLINE n= 493, EMBASE n=2265, AMED n=59, CINAHL n=166). After the removal of duplicates, 2575 abstracts remained. Four reviewers (ML, AS, JP, SH) worked in pairs and reviewed the abstracts independently to determine if each abstract should be considered for full-text review. To ensure consistency, the first 10 titles and abstracts were reviewed and discussed in terms of the inclusion criteria by all reviewers together. At the abstract review stage studies were excluded if they did not explicitly identify involvement of PT or rehabilitation in the provision of care to pediatric populations in Canada. As per scoping review methodology, authors did not screen for level of evidence. The reviewers included 63 abstracts initially and disagreed on the inclusion of an additional 113. Differences were resolved with discussion in pairs. Fourteen differences that could not be resolved were resolved by a fifth reviewer (SW). A kappa (k) coefficient was used to indicate a level of chance-corrected agreement between reviewers upon completion of abstract review [22]. Of the 113 conflicts identified at the abstract stage, 18 were included (fig. 1) [23]. Full-text reviews were completed by four reviewers (ML, AS, JP, SH) in pairs. Of the nine conflicts identified at the full-text stage, eight were included after discussion in pairs. A total of 24 articles were selected for final inclusion (fig. 1).

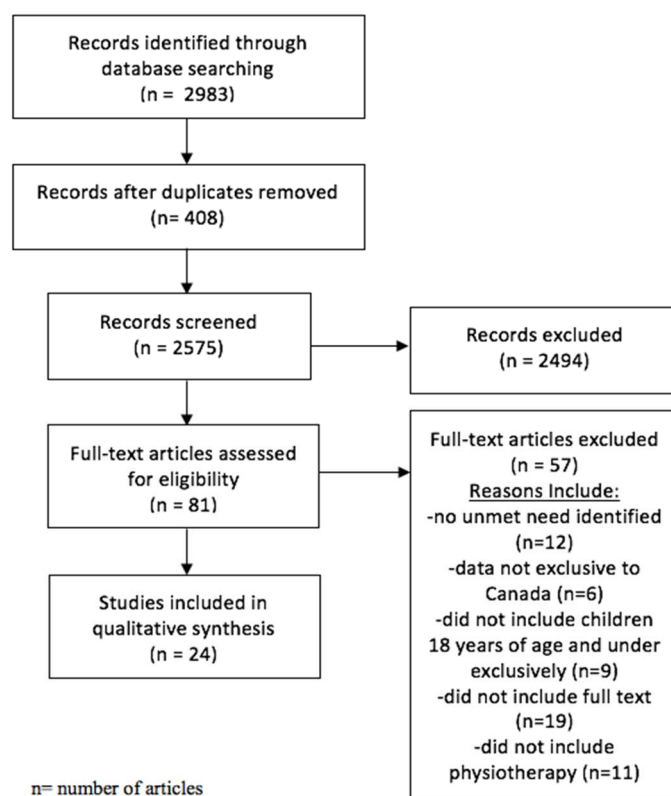


Fig. 1: PRISMA diagram of study selection

Table 1: Search strategy keywords (Ovid AMED database)

Concept	Subject headings and keywords
Physiotherapy	exp Rehabilitation/ Physiotherapists/ physiotherap*. mp. physical therap*. mp. rehabilitat*. mp.
Unmet Need	exp Health services/ exp "Health services needs and demand"/ exp Health services accessibility/ exp needs assessment/ health need*. mp. health demand*. mp. healthcare accessibility. mp. health care accessibility. mp. healthcare delivery. mp. health care delivery. mp. Child health services/child health service*. mp. (unmet adj3 need*). mp. (perceived adj3 need*). mp. (need* not met). mp. access to care. mp.
Canada	Canad*. mp. British Columbia. mp. Manitoba. mp. Alberta. mp. Saskatchewan. mp. Ontario. mp. Quebec. mp. Nova Scotia. mp. New Brunswick. mp. Prince Edward Island. mp. (Newfoundland and Labrador). mp. Yukon. mp. Northwest Territories. mp. Nunavut. mp.
Pediatrics	Child/child*. mp. minor*. mp. adolescen*. mp. juvenile*. mp. school age*. mp. pediatric*. mp. paediatric*. mp. Pediatrics/ young people. mp. young women. mp. young men. mp. high school student*. mp. teen*. mp. youth*. mp. Parents/parent*. mp.

Charting the data

Four reviewers (ML, AS, JP, SH) developed a data extraction form [19]. Information on authorship, article type, article purpose, inclusion criteria, population, setting, and unmet needs was captured using the form. To ensure consistency in the use of the form, all reviewers independently extracted data from the first five articles and then compared extractions. Discussion between the reviewers led to revisions to finalize the data extraction form (appendix B). During review it was decided that a clear distinction between unmet needs identified exclusively for PT and unmet needs identified for rehabilitation services including PT would better reflect the literature. Changes to the extraction form included providing space for this distinction, in addition to expanding the identification of unmet needs under affordability, acceptability, and availability. Four reviewers (ML, AS, JP, SH) then completed data extraction using the revised form for all included articles in pairs.

Collating, summarizing and reporting results

After completion of data extraction, all five authors discussed emerging subthemes from the included studies under each access

domain of the McIntyre *et al.* [18] framework. Numerical representations and qualitative analysis were used to summarize findings.

RESULTS

The k coefficient at the abstract screening stage was k=0.49 and k=0.50 for the first pair (ML, JP) and the second pair (AS, SH) of reviewers, respectively. At the full-text review stage, these values were k=0.79 for the first, and k=0.62 for the second pair.

The search identified a total of 24 articles for final inclusion (table 2). Two papers discussed unmet needs related to PT services exclusively. An additional seven papers discussed unmet needs for rehabilitation services and included PT specific conclusions. The remaining 15 papers identified unmet needs for rehabilitation services, of which PT was included. These 15 papers did not make conclusions specific to PT, but rather with regards to rehabilitation services generally. Only one paper discussed unmet needs from the perspective of the child [32]. The majority discussed unmet needs identified by parents/caregivers or HCPs/researchers, with 13 and 12 papers reporting from these perspectives, respectively. Two

papers discussed unmet needs from multiple perspectives (table 3) [30, 34].

Availability

Availability refers to physical or geographic access to services [18]. Twenty-three articles identified unmet availability needs, two of which were specific to PT. The most common subtheme was long wait times from referral to first appointment (n=10). Provision of services in “silos” preventing coordination between multiple providers or settings was cited frequently (n=9). Limited resources were identified by HCPs as a barrier to providing care (n=7). Location of services was a common subtheme; for example, services being provided mostly in urban communities (n=6). Patient factors, such as not having a formal diagnosis, limited the ability to access services (n=5). Lack of service consistency or volume was reported as an unmet need by parents and HCPs (n=5). Difficulty navigating referral processes, the need for HCPs with expertise on specific conditions, and the need for transportation to service locations were mentioned in three studies each. Lack of transitional support from pediatric to adult services and the need for a specific type of service or profession were each mentioned in one study (fig. 2A).

Affordability

Affordability refers to the ability to pay for products or services [18]. The cost was the only subtheme identified relating to affordability (n=5), all of which were related to rehabilitation in general and not specifically to PT services (fig. 2B).

Acceptability

Acceptability is defined as the congruence of expectations between patients and HCPs [18]. Fifteen articles discussed unmet acceptability needs, one of which was specific to PT. Subthemes included the need for information on multiple topics, such as the child's diagnosis, how to navigate the healthcare system, and for information in different formats (e. g. written resources) (n=11). A mismatch between the expectations or interpretation of the roles of HCPs and parents was a common theme preventing successful collaboration (n=6). Lack of interpreters, language barriers, and cultural differences in the understanding of a child's condition and rehabilitation were identified as a barrier to providing culturally appropriate care (n=2). A need for parents or HCPs to advocate for the child was cited in two studies. In one study, adolescents identified a need for referrals to appropriate HCPs, including PTs (fig. 2C).

Table 2: Description of included articles (n=24)

Author and year	Study type	Location	Setting	Condition/Diagnosis	Access domain (s)	Subtheme	Unmet need perspective
Unmet needs related to physiotherapy services exclusively							
Lee <i>et al.</i> 2017 [24]	Qual.–phenom.	ON	Comm., Rehab.	Acquired brain injury	Accept. Avail.	Wait times, role/expectation of HCP or parent	Parents
Wittmeier <i>et al.</i> 2016 [25]	Qual., Quant.–case study	AB	Rehab.	Non-specific	Avail.	Silos/coordination of services, wait times	HCP, Central Intake Committee
Unmet needs related to rehabilitation services, including physiotherapy specific conclusions							
Brown <i>et al.</i> 2012 [26]	Quan.–cross-sectional	MB, ON, PE, NL	Comm., School	Autism spectrum disorder, autistic disorder, pervasive developmental disorder, Asperger's disorder	Accept. Afford. Avail.	PT: Lack of consistency/volume Rehab: Role/expectation of HCP or parent, wait times, cost, the expertise of HCP, location, limited resources, need for information, lack of consistency/volume, silos/coordination of services	Parents
Choong <i>et al.</i> 2013 [27]	Quan.–cross-sectional	Canada wide	Acute	Non-specific	Avail.	PT: Patient factors, referral processes Rehab: Limited resources, expertise of HCP, patient factors	HCP
Feldman <i>et al.</i> 2002 [28]	Quan.–cohort	QC	Rehab.	Cerebral palsy, chromosomal disorders, developmental disorders, spina bifida, neuropathological conditions, brachial plexus lesions, pulmonary dysplasia, renal insufficiency, cardiac problems, fractures	Accept. Avail.	PT: Wait times Rehab: Need for advocacy	Researchers
Majnemer <i>et al.</i> 2002 [29]	Quan.–cross-sectional	QC	Rehab.	Developmental delay	Avail.	PT: Patient factors Rehab: Silos/coordination of services	Parents
Mazer <i>et al.</i> 2006 [30]	Quan.–cross-sectional	QC	Acute, Comm., Rehab., School	Cerebral palsy, global developmental delay, fractures	Avail.	PT: Wait times Rehab: Wait times, need for information	HCP
Reid <i>et al.</i> 2011 [31]	Qual.–interpretive description	ON	Not specified	Cerebral palsy	Accept. Avail.	PT: Lack of consistency/volume Rehab: Need for transportation, need for information	Parents
Stinson <i>et al.</i> 2014 [32]	Qual.–interpretive description	ON	Rehab.	Chronic pain	Accept. Avail.	PT: Role/expectation of HCP or parent Rehab: Inappropriate referrals,	Child, HCP

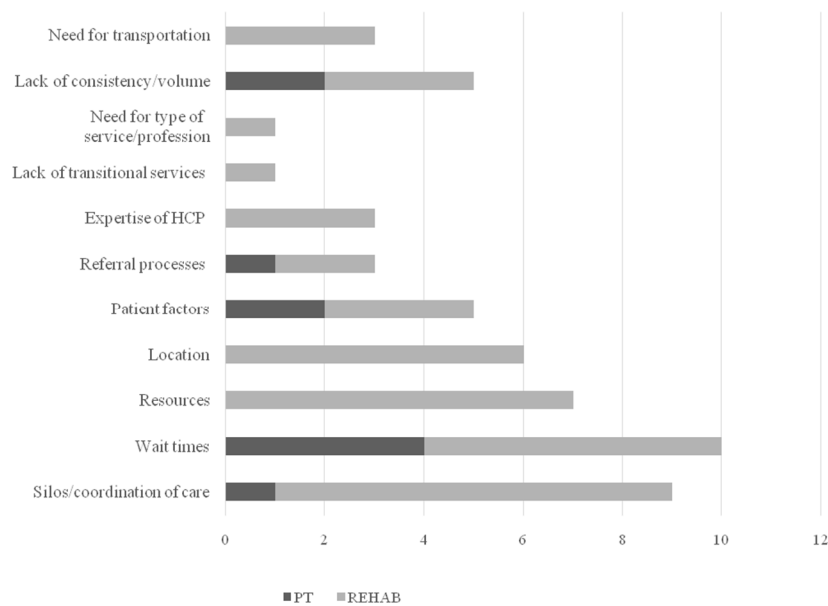
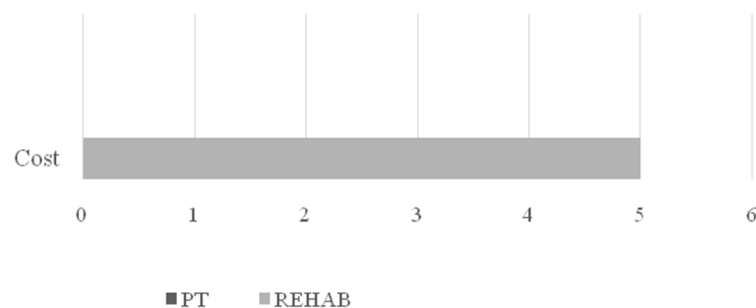
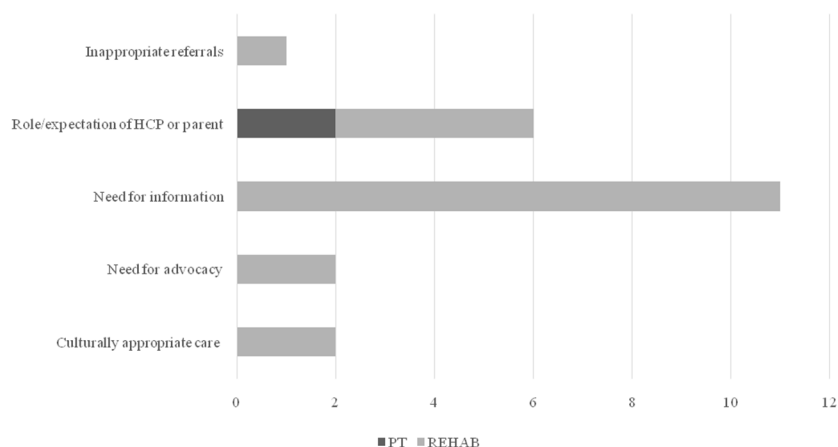
Unmet needs for rehabilitation services, of which physiotherapy was included						limited resources, need for information	
Brassart <i>et al.</i> 2017 [33]	Qual.–narrative inquiry	QC	Rehab.	Non-specific	Accept. Avail.	Culturally appropriate care, limited resources	HCP
Breik <i>et al.</i> 2018 [34]	Qual.–cross sectional Quan.–interpretive description	MB	Rehab.	Autism Spectrum Disorder	Accept. Afford. Avail.	Cost, lack of consistency/volume, location, need for transportation, patient factors, need for information	Parents and Caregivers
Camden <i>et al.</i> 2009 [35]	Qual.–action research	QC	Rehab.	Motor disorders, developmental delay, dyspraxia, speech and language disorders	Avail.	Wait times, limited resources, silos/coordination of services	HCP
Darrah <i>et al.</i> 2010 [36]	Quan.–cross sectional Qual.–narrative inquiry	AB	Comm., Rehab., School	Cerebral palsy	Accept. Avail.	Need for information, role/expectation of HCP or parent, lack of consistency/volume, location	Parent, HCP, program managers
Feldman <i>et al.</i> 2005[37]	Quan.–cross-sectional	QC	Rehab.	Neuromotor problems	Avail.	Referral processes	Parents
Foley <i>et al.</i> 2015 [38]	Qual.–opinion paper	QC	Not specified	Physical disabilities	Accept. Afford. Avail.	Cost, need for information, wait times, silos/coordination of services, limited resources, patient factors	Researchers
Kertoy <i>et al.</i> 2012 [39]	Quan.–cross-sectional	ON	Rehab.	Non-specific	Accept. Avail.	Need for information, silos/coordination of services, lack of transitional services, need for transportation	Parent
Klein <i>et al.</i> 2011 [40]	Qual.–interpretive description	AB	Other (Diag. clinic)	Autism spectrum disorder, global developmental delay, regulatory disorder of early childhood	Accept.	Need for information	Parent
Limperopoulos <i>et al.</i> 2002 [41]	Quan.–cross-sectional	Canada wide	Acute	Non-specific	Avail.	Expertise of HCP	Researchers
Lindsay <i>et al.</i> 2012 [42]	Qual.–interpretive description	ON	Comm., Rehab.	Physical disabilities	Accept. Avail.	Culturally appropriate care, limited resources, silos/coordination of services	HCP
Majnemer <i>et al.</i> 2008 [43]	Quan.–cross sectional	QC	Comm., Rehab., School.	Congenital heart disease	Afford. Avail.	Cost, referral processes, wait times, location, need for the type of service/profession	Parents
Miller <i>et al.</i> 2009 [44]	Quan.–narrative inquiry	QC	Not specified	Cystic fibrosis, spina bifida, attention deficit hyperactivity disorder, Down's syndrome	Accept. Avail.	Silos/coordination of services need for information	Parents and caregivers
Peng <i>et al.</i> 2007 [45]	Quan.–a cross-sectional study	NS, QC, ON, AB, BC	Rehab.	Chronic pain	Avail.	Wait times, location	Researchers
Roy <i>et al.</i> 2008 [46]	Qual.–interpretive description	QC	Comm. (home care)	Motor disabilities	Accept. Afford. Avail.	Cost, silos/coordination of services, role/expectation of HCP or parent, need for information, need for advocacy	Parents
Wiert <i>et al.</i> 2010 [47]	Qual.–interpretive description	AB, ON	Rehab.	Cerebral palsy	Accept. Avail.	Role/expectation of HCP or parent, location	Parents

Qual. = Qualitative HCP = Healthcare Provider NS = Nova Scotia Rehab. = Rehabilitation, Quan. = Quantitative AB = Alberta ON = Ontario Diag. = Diagnostic, Accept. = Acceptability BC = British Columbia PE = Prince Edward Island Phenom. = Phenomenological, Afford. = Affordability MB = Manitoba QC = Quebec, Avail. = Availability NL = Newfoundland and Labrador Comm. = Community

Table 3: Article counts according to unmet needs perspective and access domains

		Access domain			
		Availability	Acceptability	Affordability	Number of articles*
Unmet Needs Perspective	HCP/Researcher	11	6	1	12
	Parent	12	10	4	13
	Child	0	1	0	1
	Number of Articles*	23	15	5	

HCP = Healthcare Provider, *Note: Several articles discussed unmet needs from multiple access domains or multiple perspectives.

**Fig. 2: (A) Frequency of availability subthemes****Fig. 2: (B) Frequency of affordability subthemes****Fig. 2: (C) Frequency of acceptability subthemes**

DISCUSSION

The availability domain was the most commonly identified theme, followed by acceptability; affordability was relatively uncommon. This draws parallels and differences between the pediatric and adult literature [13]. In a scoping review that identified unmet needs for community PT in Canadian adults, availability was also reported most frequently [13]. However, this previous review identified affordability as a significant theme and found acceptability to be

infrequently reported which differs from the results of this scoping review [13].

Acceptability

The most prevalent subtheme that emerged in the acceptability domain in this review was the need for information provided to families, none of which were in relation to PT exclusively. In Brown *et al.* [26], parents of children with Autism Spectrum Disorder (ASD)

reported a need for information from HCPs regarding the therapy process and services for their child. Parents and therapists of children with CP also reported a need for information regarding the diagnosis and availability of resources in the community, as well as a need for rationales for the interventions provided to the child [31,36]. A unique finding of this scoping review was the need for information in a written format identified by parents of children with ASD and global developmental delay [40]. This subtheme emphasizes the reality that in pediatric rehabilitation, although the patient is the child, the child's family and caregivers are usually key members in the circle of care. In the field of childhood disability, family represents the essential environment; therefore, a family-centered approach forms the foundation for service provision in pediatric rehabilitation [48]. Family-centered therapy refers to the involvement of patients and their family members in healthcare processes and decisions [49]. When providing family-centered care therapists should engage in collaborative goal setting, effective communication with families, and provide clear information on the child's condition with written resources [49]. Previous literature has identified trusting relationships, sharing of information, and collaboration in goals and treatments as the qualities perceived by children, parents and PTs to be important for the therapeutic alliance [50]. These recommendations align with the unmet needs for information identified in this scoping review, suggesting that it is important for pediatric rehabilitation professionals to engage in family-centered care techniques in order to meet the need for information.

The roles/expectations of the HCP and family is another subtheme that emerged from the acceptability domain. Two articles discussed roles/expectations specific to PT. Lee *et al.* [24] explored the perceptions of parents of children with acquired brain injuries on PT in the transition from rehabilitation to school. The parents identified a need for PTs to provide encouragement to their children in regard to fitness and exercise both during rehabilitation and after discharge. Darrah *et al.* [36] reported a discrepancy in goal setting, with some parents wanting more and others wanting less responsibility in setting goals for their children with CP. The roles/expectations subtheme also relates to the idea of family-centred care in pediatric rehabilitation by demonstrating the importance of collaboration between parents and HCPs. When conceptualizing the practice of family-centered care, a collaborative relationship between parties should be established, where roles and expectations are clearly outlined in order to meet the individual needs of the family [51].

Affordability

Affordability was identified less often than the other two access domains. All of these studies (n=5) focused on the subtheme of cost of services, none of which discussed the need in relation to PT services exclusively. The reason for fewer reports of unmet affordability needs in pediatrics compared to adults may be a result of a greater amount of publicly-funded PT delivery for Canadian children. Under the Canada Health Act, the costs of inpatient and outpatient hospital health services, including PT, that are deemed medically necessary are covered for eligible Canadians [52]. The majority of included articles reported pediatric PT service provision in hospital or rehabilitation settings, many of which were publicly-funded, with few articles reporting service provision in the community. In Canada's most populated province, Ontario, individuals who are 19 y or younger are eligible to receive coverage for community-based PT services at publicly-funded PT clinics [53]. This funding model may help to reduce access issues with regard to affordability of services for children. Interestingly, the identified subtheme of wait times may be related to the funding model for pediatric PT, which increases financial access to all children in need.

Availability

In the availability domain the most prevalent subthemes were waited times and silos/coordination of services. Feldman *et al.* [37] and Camden *et al.* [35] reported long waiting times for pediatric PT and rehabilitation services in Quebec, respectively. Both articles discussed access for children with congenital conditions, such as CP and Spina Bifida (SB), and developmental problems, such as DCD

[35, 37]. Early rehabilitation for children with developmental delays is needed to optimize their functional development [6, 7]. With waiting times of several months, children with CP or DCD can miss long periods of rehabilitation intervention, which is especially important at younger ages during critical developmental periods [8]. Children with SB are often hospitalized as a result of secondary complications that are preventable, such as shunt malfunctions, urinary tract infections, and pressure ulcers [54]. Outpatient therapy can help to prevent hospitalization by teaching self-management strategies to patients and families [54]. However, limited accessibility to PT due to long wait times limits the self-management opportunities for children with SB, potentially leading to more hospitalizations for preventable conditions [54].

The results from this scoping review and the literature highlight the need for service reorganization in pediatric rehabilitation [25,55]. A retrospective study examined changes in waiting times for pediatric rehabilitation services, including PT, in Quebec [55]. Waiting times significantly decreased as a result of service reorganization; however, changes in waiting times for PT specifically were non-significant. The results of these studies suggest that future service reorganization initiatives may help address this unmet accessibility need. Specific changes that have reduced wait times include central intake/admission procedures and greater numbers of group-based interventions [25, 55]. When engaging in service reorganization for pediatric rehabilitation, the "5 R's of Reorganization" by Phoenix *et al.* [56] may be considered. This model outlines a five-step process to effectively plan service delivery changes, including 1) recognizing the need for change, 2) reallocating resources, 3) reviewing the reality of clients, service delivery, and the community, 4) reconstructing reality, and 5) reporting results [56].

Wittmeier *et al.* [25] is the only article that reported the silos/coordination of services sub-theme specific to PT. This study discussed a relationship between long waiting times for PT and a lack of coordination between service providers. They identified services as being provided in a "silo" format [25]. This introduces accessibility issues including difficulties for family navigation through the healthcare system and individual waitlists for each pediatric PT program [25]. In addition to long wait times, Camden *et al.* [35] also reported an unmet need for service coordination between HCPs. Therefore, there may be a relationship between lack of coordination and longer wait times. Greater efforts for interdisciplinary collaboration between a child's healthcare team may help to reduce wait times by preventing service duplication and by reducing the number of waitlists a child is placed on [25]. More research on the relationship between coordination of pediatric care and improved access could help to solidify this association.

LIMITATIONS

The present scoping review has certain limitations. The age cut-off of 18 y was chosen based on the age cut-offs for services in many pediatric centres across Canada, such as the Montreal Children's Hospital, or the Holland Bloorview Kids Rehabilitation Hospital [14, 15]. However, this cut-off does not meet the age range for all pediatric PT services across Canada, and therefore it may have resulted in missing data included in articles focusing on pediatrics with older age cut-offs. Since studies exploring children exclusively were included, data from studies including both children and adults may have been excluded that could have further informed the findings. In addition, a comprehensive search of the grey literature was not completed which may contain valuable information regarding unmet needs for this population.

CLINICAL RELEVANCE

Within a multidisciplinary rehabilitation setting, there is a need for increasing coordination of care between services, appropriate information and education for the parents, as well as clarification of roles and expectations for both HCPs and parents. Extended wait times were also identified as a barrier to accessing services in this population. Clinicians should continue to strive for open communication with families and negotiation of roles and expectations of one another. Policymakers should consider the implications of long wait times for accessing services for this population.

FUTURE DIRECTIONS

The literature search was designed with keywords focused on capturing studies reporting unmet needs for PT services in a pediatric population. However, a substantial portion of the pediatric literature explores PT as part of a comprehensive team delivering rehabilitation services to children. Therefore, an important direction for future research would be to conduct a search for the unmet needs that encompasses the broader team of rehabilitation professionals.

CONCLUSION

Although previous literature has identified unmet needs for PT services for adults in the community, there is a lack of literature investigating needs for PT in pediatrics [13]. This scoping review found that parents and HCPs report numerous unmet needs related to availability and acceptability, reflecting the importance of ensuring that families have access to comprehensive and continuous services that meet their diverse needs. Clinicians may focus on the provision of family-centered care which may address many of the needs identified in this review.

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AUTHORS CONTRIBUTIONS

All the author have contributed equally.

CONFLICTS OF INTERESTS

The authors do not disclose any conflicts of interest.

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